

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Christian SCHIEBLICH

Serial No. 10/566,357

Group Art Unit: 3662

Confirmation No. 2524

Filed: January 30, 2006

Examiner: PHAN, Dao Linda

For: **ANTENNAS ARRAY CALIBRATION ARRANGEMENT AND METHOD**

PETITION TO WITHDRAW HOLDING OF ABANDONMENT UNDER 37 C.F.R. § 1.181

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

A Notice of Abandonment mailed December 27, 2007 indicated that the above-identified application was abandoned for failure to timely file a proper reply to the June 26, 2007 Office Action.

In fact, Applicants timely submitted a Response to the Office Action on November 7, 2007. Unfortunately, due to a clerical error, the application number on the papers filed on November 7, 2007 was erroneously written as 10/556,357 instead of 10/566,357. PTO did not notice the error in the application number although the inventor name, the application title and the attorney of record did not correspond.

Applicants respectfully request correction of the record for both 10/556,357 and 10/566,357 (see the attached PAIR printout showing the amendment filed on November 7, 2007 placed in this unrelated application).

Copies of the Amendment filed November 7, 2007 and the stamped Postcard Receipt reflecting receipt of same by the USPTO are attached.

In view of the above, Applicants hereby petition for the Holding of Abandonment to be withdrawn and for the Examiner to consider the Amendment filed November 7, 2007.

In the alternative Applicants respectfully request revival of this application according to 37 CFR 1.137.

If there are any additional fees associated with this Petition, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: Jan. 11, 2008

By: L.Todor
Luminita A. Todor
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Docket No.: 1454.1668

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In re the Application of:

Christian SCHIEBLICH

Serial No. 10/566,357

Group Art Unit: 3662

Confirmation No. 2524

Filed: January 30, 2006

Examiner: PHAN, Dao Linda

For: ANTENNAS ARRAY CALIBRATION ARRANGEMENT AND METHOD

AMENDMENT AND REQUEST FOR INTERVIEW

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to the Office Action mailed June 26, 2007, and having a period for response set to expire on September 26, 2007. A Petition for a two-month extension of time, together with the requisite fee for same, is submitted herewith, thereby extending the period for response to November 26, 2007.

The following amendments and remarks are respectfully submitted. Reconsideration of the claims is respectfully requested.

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claim 21 and ADD new claims 27-29 in accordance with the following:

Claims 1-13 (Cancelled).

14. (Previously Presented) A system for controlling at least one of transmission and reception of signals in a radio communication system having a calibration antenna and an array of antenna elements, comprising:

a plurality of transceiving means, each connected to one element of the array of antenna elements, at least one of said transceiving means additionally connected to the calibration antenna, for at least one of transmitting and receiving test signals via the antenna elements;

at least one calibration processor determining variations of the test signals in said transceiving means; and

a beamforming processor taking into account the variations determined by said calibration processor for at least one of beamforming and determination of direction of arrival of radio signals respectively transmitted and received by the antenna elements.

15. (Previously Presented) A system according to claim 14, wherein a transmission gap in a time frame of a time division duplex system is used for transmission of the test signals for determining variations in said calibration processor.

16. (Previously Presented) A system according to claim 15, wherein in said at least one transceiving means connected to the calibration antenna test signals are switched via a switch to the calibration antenna in a calibration process.

17. (Previously Presented) A system according to claim 16, wherein said calibration processor is realized within said beamforming processor.

18. (Previously Presented) A system according to claim 17, further comprising at least one lookup table storing information related to the variations of the test signals.

19. (Previously Presented) A system according to claim 18, further comprising a base band multiplexer connected to said transceiving means, and wherein said at least one calibration processor includes at least two calibration processors, each determining variations for a different radio frequency, connected to said transceiving means via said base band multiplexer.

20. (Previously Presented) A system according to claim 14, further comprising a base station of the radio communication system, in which said transceiving means, said at least one calibration processor and said beamforming processor are located.

21. (Currently Amended) A method for controlling at least one of transmission and reception of signals in a radio communication apparatus having transceivers, each connected to one element of an array of antenna elements, at least one of the transceivers being additionally connected to a calibration antenna, said method comprising:

at least one of a receiver calibration procedure and a transmitter calibration procedure, the receiver calibration procedure including:

generating test signals,

feeding the test signals to the at least one of the transceivers connected to the calibration antenna,

transmitting the test signals via the calibration antenna,

receiving the test signals by the antenna elements and corresponding transceivers,

determining, in at least one calibration processor, reception variations of the test signals in the transceivers, and

taking into account the reception variations, determined in the at least one calibration processor, for determination of direction of arrival of respectively received radio signals by the antenna elements; and

the transmitter calibration procedure[[,]] including

generating the test signals,

feeding the test signals to the transceivers,

transmitting the test signals via the antenna elements,

receiving the test signals by the calibration antenna and the at least one of the transceivers connected thereto,

determining, in the at least one calibration processor, transmission variations of the test signals in the transceivers, and

taking into account the transmission variations, determined in the at least one calibration processor, for beamforming of respectively transmitted radio signals from the antenna elements.

22. (Previously Presented) A method according to claim 21, wherein at least one of the reception and transmission variations of the test signals are determined consecutively for different radio frequencies.

23. (Previously Presented) A method according to claim 22, wherein at least one of the reception and transmission variations of the test signals are determined concurrently for different radio frequencies, using individual calibration processors for the different radio frequencies.

24. (Previously Presented) A method according to claim 23, further comprising determining transfer functions of at least one of transmitting and receiving paths in the calibration processor.

25. (Previously Presented) A method according to claim 24, further comprising determining a maximum of a phase and amplitude difference of a coupling coefficient in each calibration processor.

26. (Previously Presented) A method for controlling at least one of transmission and reception of signals in a radio communication apparatus having communication transceivers, respectively connected to an array of antenna elements, and a calibration transceiver connected to a calibration antenna, said method comprising:

at least one of a receiver calibration procedure and a transmitter calibration procedure, the receiver calibration procedure including:

generating test signals,

feeding the test signals to the calibration transceiver,

transmitting the test signals via the calibration antenna,

receiving the test signals by the antenna elements and corresponding communication transceivers,

determining, in at least one calibration processor, reception variations of the test signals in the communication transceivers, and

taking into account the reception variations, determined in the at least one calibration processor, for determination of direction of arrival of respectively received radio signals by the antenna elements; and

the transmitter calibration procedure, including

generating the test signals,

feeding the test signals to the communication transceivers,

transmitting the test signals via the antenna elements in a transmission gap in a time frame of a time division duplex system,

receiving the test signals by the calibration antenna and the calibration transceiver,

determining, in the at least one calibration processor, transmission variations of the test signals in the communication transceivers, and

taking into account the transmission variations, determined in the at least one calibration processor, for beamforming of respectively transmitted radio signals from the antenna elements.

27. (New) A radio communication system for controlling at least one of transmission and reception of radio signals, having a calibration antenna and an array of antenna elements, comprising:

a plurality of transceivers, each connected to one antenna element of the array of antenna elements, at least one transceiver additionally connected to the calibration antenna via which the at least one transceiver transmits first test signals from the calibration antenna to the antenna elements and/or receives second test signals transmitted from the antenna elements to the calibration antenna;

at least one calibration processor determining variations of at least one of the first and second test signals; and

a beamforming processor taking into account the variations determined by said at least one calibration processor in performing at least one of beamforming and determination of a direction of arrival of the radio signals respectively transmitted and received by the antenna elements.

28. (New) A method according to claim 27, wherein the calibration antenna sends or receives only test signals and communicates to the at least one calibration processor via the at least one of said transceiving means.

29. (New) A method for controlling at least one of transmission and reception of signals in a radio communication apparatus having transceivers, each transceiver being connected to one element of an array of antenna elements, at least one of the transceivers being additionally connected to a calibration antenna, said method comprising:

at least one of a receiver calibration procedure and a transmitter calibration procedure, the receiver calibration procedure including:

generating test signals,

feeding the test signals to the at least one of the transceivers connected to the calibration antenna,

transmitting the test signals via the calibration antenna,

receiving the test signals by each antenna element of the array of antenna elements and each corresponding transceivers,

determining, in at least one calibration processor, reception variations of the test signals received in the transceivers of each antenna element, and

taking into account the reception variations, determined in the at least one calibration processor, for determination of a direction of arrival of radio signals received by any antenna element of the array of antenna elements; and

the transmitter calibration procedure, including

generating the test signals,

feeding the test signals to the transceivers of the antenna elements,

transmitting the test signals via the antenna elements,

receiving the test signals by the calibration antenna and the at least one of the transceivers connected thereto,

determining, in the at least one calibration processor, transmission variations of the test signals in each of the transceivers of the antenna elements, and

taking into account the transmission variations, determined in the at least one calibration processor, for beamforming of radio signals transmitted from each of the antenna elements.

REMARKS

In accordance with the foregoing, claims 27-29 are added. No new matter is added. Claims 14-28 are pending and under consideration.

Rejections under 35 U.S.C. § 102

In item 2 on page 2 of the June 26, 2007 Office Action, claims 14-26 were rejected as anticipated by "Applicant admitted prior art" by citing Figs. 2 and 3 of the application. This rejections suggests that the Examiner either did not read all of the limitations recited in the claims, particularly claim 21, or did not give appropriate weight to the recited limitations. Therefore, an Interview with the Examiner is requested, so that the undersigned can obtain an understanding of how the Examiner is reading the claims, to avoid issuance of another Office Action that does not move examination forward.

It is submitted that nothing in Figs. 2 and 3, or anything else in the application that could be considered a description of prior art, discloses "at least one of said transceiving means **additionally connected** to the calibration antenna, for at least one of transmitting and receiving test signals via the antenna elements" (claim 14, lines 4-6, emphasis added). In FIGS 2 and 3, none of the transceiving means TX and RX of the antenna elements is connected to the calibration antenna. In the prior art, the calibration antenna has its own calibration transmitter (TXc) and receiver (RXc) circuits (see paragraph [0011] of the Substitute Specification which are not connected to any of antenna elements #1 ... #n. Thus, Figs. 2 and 3 do not anticipate all the features recited in claim 14. Accordingly, Applicant respectfully traverses, and requests reconsideration of the rejection.

Claims 15-20 depending directly or indirectly from independent claim 14 are also patentable at least by inheriting patentable features from independent claim 14.

Independent claim 21 recites a method distinguishing over the prior art at least by reciting "feeding the test signals to the at least one of the transceivers connected to the calibration antenna" (claim 21, lines 8-9) and "receiving the test signals by the calibration antenna and the at least one of the transceivers connected thereto" (claim 21, lines 22-23). Therefore, claim 21, as well as claims 22-25 depending directly or indirectly from claim 21, patentably distinguish over Figs. 2 and 3 of the application.

Independent claim 26 recites "transmitting the test signals via the antenna elements in a transmission gap in a time frame of a time division duplex system" (claim 26, lines 20-21). There is no suggestion in Figs. 2 and 3 or anything else in the application that could be considered a

description of prior art that teaches or suggests such a feature. Therefore, claim 26 patentably distinguishes over Figs. 2 and 3 of the application.

New Claims

Claims 27 and 29 are respectively recite an apparatus and method supported by the specification and patentably distinguish over the cited prior art for at least the reasons discussed above with respect to claims 14 and 21, respectively. Claim 28 further defines the calibration antenna as described, for example, in paragraphs 11 and 12 on page 3 of the Substitute Specification.

Request for Examiner Interview

In light of the changes in rules going into effect on November 1, 2007 which limit the number of opportunities for applicants to respond to rejections, particularly in a case like this where no prior art references were cited in rejecting the claims, Applicant respectfully requests that the Examiner contact the undersigned to arrange an Examiner Interview prior issuance of another Office Action.

Conclusion

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: _____

By: _____

Luminita A. Todor
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|--|--------|----------------------|----------------------|
| REPLY/AMENDMENT FEE TRANSMITTAL | | Attorney Docket No. | 1454.1668 |
| | | Application Number | 10/556,357 |
| | | Filing Date | January 30, 2006 |
| | | First Named Inventor | Christian SCHIEBLICH |
| | | Group Art Unit | 3662 |
| AMOUNT ENCLOSED | 850.00 | Examiner Name | Phan, Dao Linda |

FEE CALCULATION (fees effective 12/08/04)

| CLAIMS AS AMENDED | Claims Remaining After Amendment | Highest Number Previously Paid For | Number Extra | Rate | Calculations |
|--|----------------------------------|------------------------------------|--------------|---------------|--------------|
| TOTAL CLAIMS | 16 | - 20 = | 0 | X \$ 50.00 = | \$ 0.00 |
| INDEPENDENT CLAIMS | 5 | - 3 = | 0 | X \$ 200.00 = | 400.00 |
| Since an Official Action set an original due date of September 26, 2007, petition is hereby made for an extension to cover the date this reply is filed for which the requisite fee is enclosed (1 month (\$120)); (2 months (\$450)); (3 months (\$1,020)); (4 months (\$1,590)); (5 months (\$2,160)): | | | | | 450.00 |
| If Notice of Appeal is enclosed, add (\$500.00) | | | | | |
| If Statutory Disclaimer under Rule 20(d) is enclosed, add fee (\$130.00) | | | | | |
| Information Disclosure Statement (Rule 1.17(p)) (\$180.00) | | | | | |
| Total of above Calculations = | | | | | \$ 850.00 |
| Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28) | | | | | |
| TOTAL FEES DUE = | | | | | \$ 850.00 |

- (1) If entry (1) is less than entry (2), entry (3) is "0".
- (2) If entry (2) is less than 20, change entry (2) to "20".
- (4) If entry (4) is less than entry (5), entry (6) is "0".
- (5) If entry (5) is less than 3, change entry (5) to "3".

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Check enclosed as payment.

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If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

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| Deposit Account No. | 19-3935 |
| Deposit Account Name | STAAS & HALSEY LLP |

The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STAAS & HALSEY LLP

| | | | | |
|------------|-------------------|--|----------|--------|
| Typed Name | Luminita A. Todor | | Reg. No. | 57,639 |
| Signature | | | Date | |

Please Date Stamp and return

Reply/Amendment Fee Transmittal; Amendment and Request for Interview; Check \$880.00 ✓
(\$420 ext. independent claims fee; \$460 2-month extension of time fee)

APPLICANT(S): Christian SCHIEBLICH

SERIAL NO: 10/556,357

CONFIRMATION NO. 2524

TITLE: ANTENNAS ARRAY CALIBRATION ARRANGEMENT AND METHOD

FILING DATE: January 30, 2006

DOCKET NO: 1454.1668/RAG:LT:mbs

DUE DATE: November 26, 2007 (EXTENDED BY TWO MONTHS)



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Antennas Array Calibration Arrangement and M

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Available Documents

| Mail Room Date | Document Code | Document Description | Document |
|----------------|---------------|---|----------|
| 11-23-2007 | NTC.PUB | Notice of Publication | PROSEC |
| 11-19-2007 | APP.FILE.REC | Filing Receipt | PROSEC |
| 11-07-2007 | A.PE | Preliminary Amendment | PROSEC |
| 11-07-2007 | CLM | Claims | PROSEC |
| 11-07-2007 | REM | Applicant Arguments/Remarks Made in an Amendment | PROSEC |
| 11-07-2007 | WFEE | Fee Worksheet (PTO-06) | PROSEC |
| 10-10-2007 | CFILE | Request for Corrected Filing Receipt | PROSEC |
| 09-12-2007 | APP.FILE.REC | Filing Receipt | PROSEC |
| 09-12-2007 | M903 | Notice of DO/EO Acceptance Mailed | PROSEC |
| 08-23-2007 | NTC.PUB.DATE | Notice of New or Revised Publication Date | PROSEC |
| 08-17-2007 | IMIS | Miscellaneous Internal Document | PROSEC |
| 10-17-2006 | PEFR | Applicant Response to Pre-Exam Formalities Notice | PROSEC |
| 10-17-2006 | OATH | Oath or Declaration filed | PROSEC |
| 10-17-2006 | N417 | Status Letter Mailed to Applicant | PROSEC |
| 10-17-2006 | IMIS | Miscellaneous Internal Document | PROSEC |
| 08-23-2006 | M905 | Notice of DO/EO Missing Requirements Mailed | PROSEC |
| | | Request for | |

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|------------|-------|---|--------|
| 08-11-2006 | CFILE | <u>Corrected Filing Receipt</u> | PROSEC |
| 05-10-2006 | A.PE | <u>Preliminary Amendment</u> | PROSEC |
| 05-10-2006 | CLM | <u>Claims</u> | PROSEC |
| 05-10-2006 | REM | <u>Applicant Arguments/Remarks Made in an Amendment</u> | PROSEC |
| 05-10-2006 | IDS | <u>Information Disclosure Statement (IDS) Filed</u> | PROSEC |
| 05-10-2006 | NPL | <u>NPL Documents</u> | PRIOR |
| 05-10-2006 | FOR | <u>Foreign Reference</u> | PRIOR |
| 11-10-2005 | TRNA | <u>Transmittal of New Application</u> | PROSEC |
| 11-10-2005 | SPEC | <u>Specification</u> | PROSEC |
| 11-10-2005 | CLM | <u>Claims</u> | PROSEC |
| 11-10-2005 | ABST | <u>Abstract</u> | PROSEC |
| 11-10-2005 | DRW | <u>Drawings-only black and white line drawings</u> | PROSEC |
| 11-10-2005 | WFEE | <u>Fee Worksheet (PTO-06)</u> | PROSEC |
| 11-10-2005 | IDS | <u>Information Disclosure Statement (IDS) Filed</u> | PROSEC |
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| 11-10-2005 | 371P | <u>Documents submitted with 371 Applications</u> | PROSEC |
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| 11-10-2005 | IMIS | <u>Miscellaneous Internal Document</u> | PROSEC |
| 11-10-2005 | WCLM | <u>Claims Worksheet (PTO-2022)</u> | PROSEC |
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